

### SUSTAINABILITY REPORT 2015

### MAKING A DIFFERENCE TO OUR WORLD THROUGH GLASS TECHNOLOGY

### WELCOME TO OUR SUSTAINABILITY REPORT 2015

We are an innovative, forward-thinking glass technology company built on a foundation of many years of expertise. Our global team is committed to developing and manufacturing products that meet the needs of customers, and open up new markets through research, development and innovation.

We are committed to sustainable development. Working safely and ethically, we supply high-quality glass products that make an important contribution to improving living standards, to people's safety and wellbeing, and to energy conservation and generation.

Glass manufacture is energy intensive, but our products make a major contribution to energy conservation during their life cycle.

ast year we made further progress in embedding the principles of sustainable levelopment within our Company.

As members of the UN Global Compact, we consider its ten principles to be a natural extension of our Code Of Ethics, which defines our commitment to social and environmental responsibility.

The benefits of our major restructuring and efficiency programs are reflected in our reduced CO<sub>2</sub> emissions and resource consumption.

The Group's progress towards our sustainability targets is covered in this Report and on our website.

Additional information, charts and tables covering our performance are shown in the Sustainability section of our website, www.nsg.com/sustainability.



This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

#### **Cover picture**

The SALT sauna and amphi theater Agora, Norway, features Pilkington Insulight™ Protect and Pilkington Optilam™ Therm S3 Photo: Trond Kristiansen

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### PRESIDENT AND CEO'S MESSAGE



Our VA strategy underlines the contribution our products and services make to society and our environment." The challenges we face in managing the world's limited resources have shaped our vision to make a difference to our world through glass technology, and our commitment to the sustainable development of the NSG Group.

Glass production is an energy intensive process and yet the application of glass can offer society opportunities to mitigate climate change. Our businesses always endeavour to make a positive social and environmental contribution to the value chains in which we operate and we can only achieve our sustainability objectives by balancing the needs of all our stakeholders.

The new sustainability targets discussed in this report emphasize the long term strategic priorities for the NSG Group and the progress we have made towards their attainment. By managing the environmental impact of our activities, we are able to work in harmony with our communities and we will continue to challenge ourselves to improve our energy efficiency and resource management. This year we have reduced our greenhouse gas emissions by an additional one percent compared to the previous year through improved utilization of our facilities and energy saving initiatives.

The health and safety of our employees, and of all our stakeholders, is fundamental to our business. The annual 'NSG Group Safety Day' clearly demonstrates our commitment to this principle and as members of the UN Global Compact we support the advancement of all its principles. Our Code of Ethics are a natural extension to the UN Global compact and this year they were updated to include more practical guidance on how we should conduct ourselves in our day-to-day business.

Good corporate governance is a foundation for the sustainable development of the NSG Group. This year we introduced our Corporate Governance Guidelines to strengthen this purpose and to signify our support of the Principles of the Tokyo Stock Exchange Corporate Governance Code.

Working safely and ethically, we will continue to embed the principles of sustainability within the NSG Group and to make a positive contribution to our environment.

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**Shigeki Mori** Representative Executive Officer President and CEO



# The NSG Group offers a wide range of Value Added (VA) products and services across our Architectural, Automotive and Technical Glass businesses that can help mitigate climate change or improve safety.

#### **VA Strategy**

Our strategic vision as a VA Glass Company is to engage with our customers to develop new and innovative products for our markets, and offer a greater proportion of VA products and services. The Group is also working closely with our customers to deliver products and services that support their own sustainability objectives and reduce the environmental impact throughout the product lifecycle.

Our efforts are leading to significant and lasting contributions to energy conservation and to social and environmental sustainability. Good management of our people, our resources, our communities and our environment makes good business sense.



### OUR GLOBAL OPERATIONS

The NSG Group is one of the world's largest manufacturers of glass and glazing products for the Architectural, Automotive and Technical Glass sectors. With around 27,000 permanent employees, we have principal operations in 28 countries and sales in over 130.



## SUSTAINABILITY TARGETS

Target	2015 target achievement	New FY2018 targets
Safety	The Significant Injury Rate at the end of FY2015 was 0.35 which represents a 75 percent improvement and meets the 80 percent reduction target from 2007 base of 1.38 to 0.30 (10 SI per month, compared to baseline of 50).	<ul> <li>Reduce Significant Injury Rate by 10 percent per year</li> <li>No fatality</li> </ul>
Waste	NSG successfully exceeded the 50 percent landfill waste reduction target by 2015 on a 2007 baseline in 2013. Our waste to landfill figure for 2014 was 26kt. This is a 13 percent reduction on our new 2013 baseline.	<ul> <li>Reduce waste to landfill by 6kt (20 percent reduction on 2013)</li> </ul>
Energy and CO <sub>2</sub> reduction	Despite a 13 percent reduction in absolute $CO_2$ emissions (4.8M tonnes in 2010 to 4.1Mt $CO_2$ in 2014) poor market conditions prevented us from demonstrating a reduction in specific energy usage for eight key products.	<ul> <li>One percent year on year reduction in CO<sub>2</sub> intensity across glass manufacturing operations. This includes at least 70 percent of the NSG Group operational CO<sub>2</sub> emissions by FY2018</li> </ul>
Sustainable value added products	NSG did not meet its 2015 economic target to exceed a 10 percent operating profit margin. As at March 2015, the operating profit margin (before amortization arising on the acquisition of Pilkington) was 4 percent.	<ul> <li>Increase proportion of value-added products in total sales from approximately 1/3 to 1/2 in FY2019</li> <li>Demonstrate the added environmental or social benefit of products</li> </ul>
Responsible sourcing and transportation	We have communicated our Supplier Code of Conduct to all of our suppliers and evaluated > 280 suppliers against it.	<ul> <li>Continue our commitment to communicate the Supplier Code of Conduct to new suppliers and maintain the ongoing agreement of current suppliers</li> <li>Extend our program of supplier sustainability evaluation by 20 percent per year</li> <li>Continue to monitor suppliers that use materials with a potentially high environmental impact</li> <li>Work with supply chain partners to innovate our logistics arrangements to improve environmental impact of our products</li> </ul>
Employees	The Group target was achieved. In 2015, 91 percent of shop floor FT employees had an annual training and development review.	<ul> <li>Commitment to continue to measure employee engagement. All areas to have 2014 Employee Survey action plans, aiming for 90 percent progress in each of these plans by the end of FY2016</li> <li>Continue with performance management initiatives to ensure that the appraisal process is maintained at the right standard. 100 percent of appraisal plan owners attend training to improve the discussion on employee development by the end of FY2016</li> <li>75 percent of employees to have either a collective or individual employee personal development plan by the end of FY2018</li> <li>Train 100 percent of commercial managers in the Commercial Leadership Program</li> </ul>
Ethics and Compliance	No 2015 targets	<ul> <li>Relaunch Code of Ethics and maintain 100 percent completion of briefing and training</li> <li>Continue communication of relaunched Ethics &amp; Compliance Hotline and reporting of all concerns</li> <li>Identify, track and report meaningful Ethics &amp; Compliance KPI metrics</li> <li>Reissue Governance and Leadership Culture Assessment</li> </ul>

**ABOUT US** 

## OUR APPROACH TO SUSTAINABILITY



Risks associated with climate change are an opportunity for the NSG Group to make a positive contribution to our environment." Glass is playing an important role in society's efforts to reduce greenhouse gas emissions and to mitigate the effects of climate change. We aim to be the global leader in innovative high-performance glass and glazing solutions, contributing to energy conservation and generation, while working safely and ethically.

Our efficiency programs are continuing to deliver reductions in energy consumption, greenhouse gas emissions and waste production. We train and develop our people while respecting their human rights and keeping them safe from workplace injuries or occupational illness. We encourage our contractors and supply chain to take similar steps through the ongoing evaluation of our key suppliers' sustainability practices.

Our sustainability agenda is integral to decreasing our costs and increasing our market opportunities. Over the past year, we have continued our efforts in areas such as energy reduction and waste recycling, both of which can have a significant and swift impact on the business performance of the Group. Glass markets are extremely competitive around the world and it is imperative that we can meet the ever-increasing demands of customers.

#### Shiro Kobayashi

Director of Sustainability



#### **Outcome of Materiality Assessment**



Importance to business

#### Materiality

For the purposes of this Report, we consider material information to be that which is of greatest interest to, and which has the potential to affect the perception of, those stakeholders who wish to make informed decisions and judgments about the Company's commitment to environmental, social and economic progress. The NSG Group Sustainability Committee agreed on material issues based on the Group's key impacts and stakeholder feedback throughout the year. These material issues have been combined into our Sustainability Targets.

Financial issues are of the highest importance to stakeholders and are reported separately in our Annual Report. Financial health remains a critical issue to NSG and cost reductions are vital to our strategy and everyday activities.

Achievement of the Medium-term-Plan (MTP) requires customer communication that improves our understanding of needs and concerns. We have developed a commercial leadership program to enhance the marketing and strategic skills of our commercial managers.

Other leadership and development programs are ongoing to minimize the risk of talent loss. Feedback from an employee engagement survey has led to improved learning and development plans and a healthy and motivated workforce.

People are the NSG Group's most important asset. The minimization of safety risks is important to all stakeholders and our management program is aimed at protecting the workforce.

Our reputation is integral to the success of the NSG Group. We are committed to demonstrating good corporate governance and ethical business practice to satisfy increasing shareholder and customer questions. We will execute the MTP in line with the long-term strategic vision within our newly established Corporate Governance Guidelines. Group policies on compliance and reporting concerns have been updated to align with these guidelines. Our Group Code of Ethics has been relaunched to reflect our dedication to doing business the right way whilst minimizing regulatory and reputational risk.

Operational energy use and associated CO<sub>2</sub> emissions have a significant environmental impact combined with cost, security and regulatory risks. Operational efficiency has always been a key business concern but is now of particular interest to government, investors and customers. NSG's realignment of production capacity to lower levels of demand has provided an opportunity to increase operational and product efficiency.

Requirements from regulators and customers are providing opportunities for sustainable and innovative product design in a shift to value-added products.

Supply chain risks and impacts, especially those related to the sustainability of raw material and the environmental and human rights performance of suppliers, are important for NSG and our customers. We assess key suppliers' sustainability practices to satisfy these concerns.

#### Our management approach

We work with local communities and governments to ensure compliance and forward thinking. We do this directly and through our membership of trade associations, standards bodies and other organizations. We also work to influence legislation, particularly in energy conservation and emission regulation.

Glass making is an energy-intensive process. Significant energy is consumed in obtaining and melting the raw materials for the manufacture of glass. Despite this necessary resource consumption, this energy can be quickly saved when our products are in use. Our products make a positive contribution to climate change efforts and to the quality of living and working environments.

We have communicated our Supplier Code of Conduct to our suppliers and have conducted evaluations to verify the declarations we have received.

# 70%

We now have 81 ISO 14001 certified sites around the world, representing 70 percent of our business by turnover.

#### Our stakeholders

We aim to be judged as best in class by:

#### Our customers

To be their preferred supplier for glass products and related services.

Our employees To be their preferred place to w

#### Our shareholders

To be their preferred long-term investment.

#### Our suppliers

To build strong mutually beneficial relationships based on trust, co-operation, innovation and sustainability.

#### Our communities

To be a good neighbor, wherever we operate.

# OUR APPROACH TO SUSTAINABILITY



Our products require raw materials that must be extracted from the earth. We take our responsibility to protect the natural habitats of the affected regions seriously.

Our Code of Ethics has been relaunched and continues to reflect our values and principles, particularly the emphasis on safety, taking personal ownership for actions and communicating with openness and involvement. The Code ensures we carry out these activities in a safe, professional, legal and ethical manner, demonstrating corporate social responsibility and promoting sustainability. Wherever possible, the Code defines a fair and common sense approach to doing business, with some elements dictated by strict legal requirements.

Our Group policies and procedures detail the procedures everyone in the Group must follow to achieve sound governance, tight controls, risk management and adherence to legal, ethical and sustainable principles.

#### Environmental

We take our environmental responsibilities extremely seriously. All our operations are required to meet legislative standards as a minimum. We conduct regular environmental audits to achieve continuous improvement.

Our Group Environmental Policy outlines our management of current activity and the legacy of past and inherited liability. It reinforces our commitment to using scientific principles to try to predict and assess our impacts on the environment.

We acknowledge that our activities affect the local and global environment but we take steps to minimize adverse effects, including implementing systems to manage such impacts in a controlled manner. Principal among these is our environmental management system, which is certified to ISO 14001 for the vast majority of our glass manufacturing and automotive manufacturing sites. We are committed to reporting on our performance, both good and bad. Environmental data is collected under the broad headings of energy, emissions to air, water usage, recycling and waste. The data collected is based primarily on the core environmental performance indicator set of the Global Reporting Initiative (GRI). In addition, the Airsweb<sup>™</sup> system also incorporates an incident reporting system. The most senior executive with responsibility for environmental aspects is the Group Director of Sustainability.

#### Society

We believe we have a responsibility to be a good steward of the environment and a responsible corporate citizen. We work hard to minimize negative effects, such as pollution, noise and traffic. We operate programs to assess and manage the impacts of our operations on communities in entry, operational and exit stages. In addition to our business investments to sustain local operations, we also invest in the communities where we operate.



We aim to help charities and other projects through cash donations, or through other resources, to benefit the community or tackle specific social issues. We also encourage our people to develop community relationships. This can take the form of matching contributions raised by employees or enabling individuals to contribute their time and effort in local projects. The most senior position with responsibility for society aspects is the Group Director of Sustainability.

#### Human rights

Our Code of Ethics acknowledges internationally proclaimed human rights, which are also reflected in our employment policies and standards, providing all employees with reassurances on how they will be treated.

Our Equal Opportunity and Diversity Policy aims to prohibit discrimination based on race, color, creed, religion, age, gender, sexual orientation, national origin, disability, union membership, political affiliation or any other status protected by law, for all employment-related decisions.

The most senior executive with responsibility for human rights aspects is the Chief Human Resources Officer.

#### Labor practice

Our management philosophy values people as the most important asset of our Company. Our HR strategy aims to ensure we have the right people and that we maximize our talent management around the world.

Safety and quality underpin everything we do, with open communication central to our employment policies.

We operate as an integrated international Group, with a multinational management and 80 percent of our employees working outside Japan. We reflect diversity in our workforce and believe that the range of nationalities, skills, qualifications and experience available in our many operations are a positive benefit to our business. Our management style is to put the best person in each job, regardless of nationality or region. To attract, motivate, develop and retain high-performing employees, our approach to rewards and retention includes market-based competitive pay and competitive benefit offerings for eligible employees.

We have identified specific challenges in attracting and retaining talent, particularly in emerging markets, and we are putting policies in place to address these. We work to create a culture that allows employees the opportunity to work without fear of intimidation, reprisal or harassment. We have systems in place to permit employees to raise any concerns in a confidential and timely manner. The most senior executive with responsibility for labor aspects is the Chief Human Resources Officer.

We value the health and safety of all our employees above all other considerations. Our safety programs emphasize the importance of appropriate safe behavior and of individuals taking personal responsibility.

We regard all injuries at work as unnecessary and avoidable. No matter how minor, each one must be reported and investigated. Details of our progress on safety performance are shown in the Health and Safety section of this Report.

#### Product responsibility

We are committed to the safety of our products and to ensuring they can be easily handled, fitted and used by our customers. Our product risk-review procedures are designed to identify risks and provide advice to users on safe handling. We communicate risks on safety data sheets, labels and glazing and handling guidelines.

Every R&D project developing new products and processes is required to have an Environmental Impact Assessment completed to highlight any positive or potentially negative implications. We aim for a cradle-to-cradle life cycle management approach, incorporating environmental health and protection into every step of the life cycle of our products.

Our formal project management processes include thorough intellectual property searches, so our customers can be confident that new products and processes we develop can be used freely without fear of infringing third-party patents. The most senior executives accountable for product responsibility are the heads of the strategic business units.



EcoVadis operates an independent, external platform allowing companies to assess and benchmark their environmental and social performance on a global basis.

The process assesses Group policies, implemented procedures and published reports with regards to environmental, labor practices & human rights, fair business practices and sustainable procurement issues. The assessment is conducted by CSR experts of EcoVadis on the basis of Group answers to a survey which is dynamically adapted to country, sector and size, using scorecards covering 150 industry categories and 21 CSR criteria. The rating is based on supporting documentation, and public and stakeholder (NGOs, trade unions, press) information.

The NSG Group used this assessment tool to gain a picture of the Group's CSR performance and understand areas for improvement. We were rated as Silver regarding our approach to CSR management.

## CORPORATE GOVERNANCE



Corporate governance is a key element in the sustainability activities of the NSG Group. We are committed to effective and transparent engagement with all our stakeholders.

We believe that good corporate governance contributes to sustainable development by enhancing the performance of companies and increasing their access to outside sources of capital. We aim to maintain high levels of accountability and transparency, disclosing business goals and guidelines that clearly demonstrate a responsible management approach to all our stakeholders.

#### NSG Group Corporate Governance Guidelines

In May 2015, we announced the newly established NSG Group Corporate Governance Guidelines, supporting the Principles of the TSE Corporate Governance Code, which took effect on 1 June 2015. These Guidelines provide the basic principles and framework for the NSG Group to enhance its corporate values in a sustainable way, on a mediumto-long-term basis, thus increasing the common value of the Group for our various stakeholders, including our shareholders.

Under the corporate governance structure in the Guidelines including the balanced roles and membership of the Board of Directors, the three committees of Nomination, Audit and Compensation, and the independent External Directors and executive officers, we aim to ensure the appropriate system of check-andbalance and accountability. This enables management to make decisions in an effective, efficient and ethical manner, and maintain good relationships and address the needs of our stakeholders.

Along with the Guidelines, we also published related policies such as the Policy on Constructive Dialogue with Shareholders, General Criteria to Select Candidates for Director, and Policy and Procedure on Appointment of Executive Management. The NSG Group Corporate Governance Guidelines document itself and the related policies are also available on our corporate website: http://www.nsg.com/ en/sustainability/corporategovernance/ approach. These actions build on initiatives taken by the Group over the past few years to strengthen corporate governance and mark our progress towards the achievement of the advanced level of corporate governance.

#### Three-committee system

The Group adopts a three-committee structure and hence establishes the Board of Directors, Nomination Committee, Audit Committee, Compensation Committee and office of Executive Officer.

We believe the adoption of the model has introduced additional safeguards for shareholders, increased transparency and enhanced corporate governance by separating the functions of execution and oversight, with the role of the independent External Directors strengthened.

The NSG Group is governed by its Board of Directors, which is appointed by resolution at the General Meeting of Shareholders. The Board comprises four directors, concurrently serving as executive officers, and four independent External Directors. The Board is chaired by an independent External Director, Seiichi Asaka. In the fiscal year 2015, the Board of Directors met 12 times. The Board of Directors oversees the Group's economic, social and environmental performance and compliance with internal and internationally agreed standards, Codes of Ethics and principles.

There are three Board committees (Nomination, Audit and Compensation) and four independent External Directors.

The Nomination Committee decides the details of the agenda items to be submitted to the General Meeting of Shareholders concerning the appointment and removal of Directors. Chaired by an independent External Director, Hiroshi Komiya, the Committee consists of six members, including four independent External Directors. The Audit Committee, chaired by an independent External Director, Toshikuni Yamazaki, comprises four independent External Directors. It conducts audits of the execution of duties by directors and executive officers and ensures that adequate risk management processes are followed. It also decides the details of agenda items to be submitted to the General Meeting of Shareholders concerning the appointment and removal of Accounting Auditors.

The Compensation Committee makes decisions on compensation of individual directors and executive officers. The Committee is chaired by an independent External Director, Günter Zorn, and comprises six members, including four independent External Directors.

#### **Risk management**

The scope of our operations introduces potential risks to our business activities, requiring effective risk management. These include the effects of changes in debt market prices, foreign currency exchange rates, credit risks, energy prices, liquidity interest rates and business disruption. Our enterprise risk management process enables the impact and likelihood of key risks to be assessed in a standard format. The information is used to assess the cumulative risk exposure of the Group and promote effective global risk responses, thus strengthening our overall risk management structure.

#### **Ethics and compliance**

Our Code of Ethics has been updated and rebranded to make it more relevant to the NSG Group and represent our behavioral commitment to the Company. The Code has been made available in all 19 Group languages. Ethics Champions in every region have been carefully selected to provide vital communications and promotion of the Code at the local level. These Champions have attended workshops to prepare them for these

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#### As of 31 March 2015

activities, including supporting line managers in the understanding of the Code and facilitating the ensuing ethical discussions. Our line managers are responsible for promoting understanding of the revised Code and discussing issues and ethical behavior with their employees.

Alan Graham is Group Chief Ethics and Compliance Officer. His responsibilities include the development, implementation and maintenance of an integrated internal ethics and compliance management and control system, as well as the creation and review of relevant Group policies and procedures. Group Ethics and Compliance regularly reports to the Audit and Management Committees.

The NSG Group does business in 36 percent of the countries that scored at least 50 or higher in the 2014 Corruption Perceptions Index and has commercial agents in 20 percent of those countries. The Group conducts a continuous riskbased assessment to determine which employees face risks related to bribery, corruption and competition laws. Over 65 percent of the NSG Group's floor workforce is required to complete annual compliance training, via a third-party vendor, covering bribery/corruption, competition law and reporting unethical behaviour through the

Group's Ethics and Compliance Education Center. All are required to be familiar with the compliance program policies, manuals and procedures. Key compliance contacts have been identified in each SBU and Group function and are responsible for ensuring that the key roles in their area of responsibility are kept informed of program updates and are meeting the program requirements. Group Ethics and Compliance issues an ethics and compliance brief on a regular basis to senior managers and kev compliance contacts. The Group's communications team translates the brief into all Group languages and posts the publication on site communications boards.

Group Ethics and Compliance has partnered with Group Internal Audit to include both ABAC and competition law minimum controls in any site audit. Relationships with lobbyists are covered by the Group's ABAC program as it relates to third parties. Public policy development and lobbying information is found in the Group's Code of Ethics and on the website.

Our 'Reporting of Concerns' policy has been updated to ensure that all reported ethics- and compliance-related concerns are brought to the attention of the Chief Ethics and Compliance Officer by requiring managers to submit concerns reported

\*All four Executive Officers concurrently serve as Director.

to them using a standard Ethics and Compliance report form. While employees are encouraged to speak to HR or line management first, the Group continues to allow employees to voice corporate governance issues through an externally provided updated Ethics and Compliance Hotline either by phone or through a web portal with anonymity where legally allowed. This hotline is available in all Group languages and employees are also able to ask ethics- and compliance-related questions through this web portal. Posters have been updated and distributed at all locations. A Group Concerns Investigation Procedure has been established to ensure all relevant concerns are sufficiently and consistently investigated.

The Group's Ethics and Compliance Hotline has been made available to our commercial agents through the issuance of a Commercial Agents Compliance Manual. Information on how to access the Ethics and Compliance Hotline will be made available on NSG's external website and thus access will be extended to all. Since inception there have been 89 reported concerns managed via the Ethics and Compliance Hotline case management system.

## BUSINESS OVERVIEW



We operate in three business sectors: Architectural, supplying glass for the world's buildings and for solar energy applications; Automotive, producing glass and glazing systems for vehicles worldwide; and Technical Glass, operating in the display, optical electronics and glass fiber sectors.

\*All figures for financial year ending 31 March 2015

### Architectural

A leader in float glass technology and coatings

40%

Sales by region Financial year 2015



8,800 employees in 21 countries

#### Main products

- Thermal insulation glass
- Solar control glass
- Fire protection glazing
- Glass for solar energy
- Noise control glazing
- Safety and security glazing

### Proportion of Group CO<sub>2</sub> emissions 62 percent





#### Automotive

Supplying all major vehicle manufacturers and the after markets

# 50%

#### Sales by region

Financial year 2015



15,100 employees in 16 countries

#### **Main products**

- Solar control glass
- Glazing systems
- Laminated glass
- Toughened glass
- Security glazing
- Lightweight glazing

### Proportion of Group CO<sub>2</sub> emissions 33 percent



#### **Technical Glass**

World leader in thin display glass and optical devices for electronics

10%

Sales by region

Financial year 2015



2,000 employees in 5 countries

#### **Main products**

- Cover glass
- Copier/printer lenses
- Glass cord
- Battery separators
- Anti-corrosion coatings
- Fine crystal

### Proportion of Group $\text{CO}_2$ emissions 5 percent



## ARCHITECTURAL

### Our products are at the heart of modern architecture and play a beneficial role in addressing some of the major environmental challenges of buildings.

On average, buildings account for around 50 percent of the energy consumed in developed economies. The correct choice of glass can help to reduce the capital outlay, running costs and associated carbon emissions of buildings.

A study undertaken by TNO for Glass for Europe concluded that up to 170 million tonnes of CO<sub>2</sub> could be saved annually by 2020 if all Europe's buildings were fitted with solar control or low-e insulating glass units.

Our products offer advanced functionalities including fire protection, noise attenuation, security, electro chromics, self-cleaning and electrical conductivity.



Our products play a vital role in addressing global building energy-efficiency challenges and reducing CO<sub>2</sub> emissions.

In cold climates, low-emissivity (low-e) coated glasses like Pilkington Energy Advantage™ reflect heat back into the building and reduce heat loss through the window, while allowing high levels of valuable free passive solar energy to heat buildings without significant loss in natural light.

In hot climates, the reliance on air conditioning is mitigated through the use of advanced solar control coated glass that transmits the majority of the sun's visible light into buildings, while reflecting up to 75 percent of the solar heat and reducing glare.

Pilkington Spacia<sup>™</sup>, the world's first commercially available vacuum glazing, offers the thermal performance of conventional double glazing but with the same thickness as single glazing. Pilkington Spacia<sup>™</sup> Cool achieves a U-value of 0.9W/m<sup>2</sup>K and is commonly used in historic buildings and special applications.





Pilkington fire-resistant glass is known for offering trusted transparent solutions all over the world for more than 30 years. Today's range of products comprising Pilkington Pyrostop<sup>®</sup>, Pilkington Pyrodur<sup>®</sup> and Pilkington Pyroclear<sup>®</sup> are used in a variety of building, marine and rail transport applications.

Independent fire tests of applications incorporating Pilkington fire-resistant glass have demonstrated the remarkable long term reliability of our products.

Environmental Product Declarations for Pilkington Pyrostop® and Pilkington Pyrodur® glasses have been verified according to international standards EN and UL.



During its life cycle, a solar panel can generate over 15 times the energy used in its manufacture. NSG's glass is an integral part of the modules produced by leading companies in the solar energy industry.

As a technology leader in glass coatings and low-iron compositions, our products are helping our customers to manufacture increasingly efficient modules. Our anti-reflective coatings help maximize solar energy transmittance and NSG TEC<sup>™</sup>, a Transparent Conductive Oxide (TCO), is part of the system that generates an electrical current.

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# As a world leader in vehicle glazing, we aim to provide opportunities for vehicle manufacturers to address sustainability issues including $CO_2$ reduction, vehicle safety and recycling.

We are working across all our markets from cars to trains and tractors, to help customers develop new vehicles that are greener by design. Glass in vehicles offers more properties than simple transparency, consideration also needs to be given to acoustics, stiffness, weight, sealing, safety systems and solar control. We have also supplied glass for use in automotive photovoltaic roof systems to help reduce their reliance on conventional energy sources.

Our vehicle-glazing products provide advanced solar control properties by absorbing or reflecting infra-red energy from the sun. Approximately 30 percent of the heat loading on a car's interior comes through the windshield. Control of heat energy entering vehicles directly impacts air-conditioning usage leading to additional energy consumption and CO<sub>2</sub> output. Windshield replacement provides an opportunity to improve the energy consumption of the vehicle by using Pilkington's EZ-KOOL® or NSG Angelguard99 that reduce the heat loading on a vehicle's interior and filter up to 99 percent of UV rays.



Advancements in vehicle technology are making glazing an integral part of protecting vehicle occupants and other road users. Cameras used in automatic emergency braking systems and HUD (Head-Up-Displays) for displaying critical driver information require a high level of component integration. The NSG Group is working closely with its partners to lead the change towards making our roads safer.

The importance of environmentally friendly vehicles is growing as consumers are demanding ever more energyefficient models. Lighter-weight designs are an essential part of reducing vehicle CO<sub>2</sub> emissions and improving their energy efficiency. Our in-house developments for glass-shaping technology make it possible for vehicle manufacturers to reduce the mass of glass components by up to 25 percent.





A vehicle's windshield is an essential piece of safety equipment that we take for granted until it is damaged.

Chipped or cracked windshields reduce visibility and can lead to loss of structural integrity over time. The NSG Group's Automotive Glass Replacement (AGR) services provide an extensive range of OEM quality replacement glazings to auto glass replacement professionals throughout the world, ensuring consumer glazings can be replaced quickly and to the same standard as the original.



The NSG Group is a leading manufacturer of glazing solutions for specialized transport vehicles including trucks, coaches, off-road, marine and lightweight rail vehicles. Our extensive R&D activities and vast experience in shaping techniques guarantee our ability to manufacture the largest and most complex windscreens.

Quality and safety are vital for the driver and can require train windscreens to be impact-tested to a range of international standards using a 94-calibre air cannon.

## TECHNICAL GLASS

### Our glass technologies are used to improve the energy efficiency and sustainability of products across a diverse range of market segments.

Glass as a high-tech material offers many opportunities being light, strong, fire retardant, non-conductive and resistant to chemicals. Our patented products are used in transmission belts to improve fuel consumption, LED printers that use less energy to operate, and coatings to protect the longevity of our buildings and equipment. Our expertise in the manufacture of ultra-thin float glass is allowing the development of the next generation of touch-screen devices.



NGF, who produce the Group's advanced glass cord technology, is enabling the automotive industry to develop the next generation of energy-efficient vehicles.

The technology is primarily used in engine timing belts and Electric Power Assisted Steering (EPAS) systems to reduce fuel consumption and improve CO<sub>2</sub> emissions.

NGF's HTS (High Tensile Strength) glass cords significantly improve belt flexibility and stretch resistance. This advanced technology has been successfully incorporated into innovative 'Belt in Oil' systems that further improve engine refinement. The system delivers the quietness and more efficient running of a belt but with the durability of a conventional timing chain. Furthermore, the belt is capable of remaining in service for the life of the engine.

The PSA EB engine range has won the 2015 Engine of the Year Award in the 1 to 1.4 litre capacity. The EB engine is an advanced 3-cylinder petrol unit that uses timing belts supplied by Dayco, NGF's customer, that incorporate the Group's high tensile strength glass cord technology.





We are a world-leading supplier of ultra-thin glass for small LCD applications.

Our Ultra Fine Flat Glass (UFF) is produced in thicknesses as low as 0.3 to 1.1mm. These products are increasingly being used in the growing touch-panel market, particularly in mobile phones, tablets, computers and now expanding into use in buildings and vehicles. This technology helps reduce the need for additional peripheral equipment, allowing people to have a more natural interface with technology.





NSG, with the printer and scanner manufacturer Fuji Xerox, are jointly developing a new generation of Light Emitting Diode (LED) print heads to reduce power consumption in office equipment.

Using our proprietary SELFOC® Lens Array (SLA®) technology, the new print head provides an image quality equal to or surpassing more conventional laser scanning units but with the added advantages of miniaturization, low power consumption and low-noise operation. This allows optical systems to be designed more compactly and manufactured at a lower cost.



NSG is leading development of advanced glass products for use in battery separators. Idling Stop and Start (ISS) system installed on modern cars to cut fuel consumption use Absorbed Glass Mat (AGM) separators to greatly increase the efficiency of the batteries.

We are continuing to improve the capacity, stability, power and safety margins of customers' products. Our Super Glass Paper (SGP) technology with a 30µm thickness and >85 percent porosity is supporting the development of the next generation of batteries.

### ENVIRONMENTAL POLICIES AND MANAGEMENT



#### **Our Environmental Policy**

Our Group Environmental Policy defines our approach on environmental matters. In particular, it outlines our management of both current activity and the legacy of past and inherited liability. It reinforces our commitment to using good scientific principles to try to predict and assess our impacts on the environment, both positive and negative.

We are in a strong position to help mitigate the effects of climate change by producing products that conserve energy in buildings and vehicles.

Given the nature of our business, we acknowledge that our activities will inevitably have an environmental impact, but we have taken steps to minimize the adverse nature of any impact and have put in place systems to try to ensure that we manage such impacts in a controlled manner. The use of many of our products will lead to positive environmental impacts.

Principal among the tools we use is our environmental management system, which is certified to ISO 14001 for the vast majority of our glass manufacturing and processing sites.

We are committed to reporting on our performance, both good and bad. Environmental performance is monitored and reported for manufacturing operations that are under the direct control of the NSG Group. We continue to work with regulatory authorities worldwide on issues relating to historical industrial activity on and around Group premises.

#### **Data collection**

Environmental and safety performance data is collected across the Group using an online electronic data reporting system known as Airsweb<sup>™</sup>. This database is multilingual and accessed over the corporate intranet by sites under NSG operational control, allowing monthly updating of relevant information.

Environmental data is collected under the broad headings of energy, emissions to air, water usage, recycling and waste. The data collected is based primarily on the core environmental performance indicator set of the Global Reporting Initiative (GRI).

In addition to the collection of environmental emissions and resource usage data, the Airsweb<sup>™</sup> system also incorporates an incident reporting system. This allows the timely reporting and recording of incident data, both safety and environmental, as well as provision for tracking the progress or remedial actions and communication of learning points.

#### Monitoring performance

Supplementing the routine monitoring of our business, we also maintain a number of central registers used to guide our strategic development and maintain a high level of corporate governance in the sustainability field. For example, a register of all furnaces, their associated permits, relevant legislation and abatement capabilities is maintained and used to support the assessment of any proposed changes in operation or design.

To ensure a consistent and innovative approach, we operate a number of multidisciplinary design panels whose task is to ensure full assessment and review of proposed changes. Our stage gate process ensures that an appropriate level of information and resource is applied to an issue at set points within the development of a project or proposal. This ensures the most efficient use of our resources and encourages innovation.

For glass-manufacturing plants we have defined our strategic approach to abatement in order to ensure that across the world we hold fast to our principles, even in parts of the world where legislative controls are less well developed.

#### Certification

We aim to certify our manufacturing facilities to the internationally recognized ISO 14001 environmental standard and now have 81 certified sites around the world, representing 70 percent of our business by turnover.

Our Automotive business was one of the first in the automotive industry to achieve a corporate certificate for environmental management. A single ISO 14001 certificate from TUV SUD Management Service GmbH covers group functions and the vast majority of our Automotive plants worldwide.

NSG's Tampere and Ylojarvi plants in Finland achieved ISO 50001 certification of its energy management system for automotive glass processing in October 2015. This is in addition to our already certified German and Italian glass-melting and processing sites.

#### Environmental Product Declarations

An Environmental Product Declaration (EPD) is a verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products.

The German Institute of Building and Environment (IBU) awarded EPDs for Pilkington Profilit<sup>®</sup>, Pilkington Pyrostop<sup>®</sup> and Pilkington Pyrodur<sup>®</sup> fire-resistant glass, according to ISO 14025 and EN 15804. The Ecoprofile results allow architects and planners to access reliable environmental information and complete detailed sustainability assessments of buildings.

Pilkington Deutschland AG now has the authorization to mark Profilit® and both fire-resistant product lines with the IBU logo in monolithic format or insulating glass. The declarations are IBU listed and can be ordered upon request.



sites have recently been certified to the ISO 50001 energy management system standard.



Environmental Product Declarations have been completed for NSG fire-resistant glazing and Pilkington Profilit<sup>®</sup>.

## ENERGY USAGE



#### NSG Group energy usage





Energy management cycle

We work continuously to minimize energy input into all our processes, so that the usage of glass contributes net benefit to sustainability.

#### Our energy usage

For both environmental and financial reasons, we use natural gas as the fuel of choice for glass melting. In 2014, we reduced consumption by 1 percent compared to 2013.

### Initiatives to reduce energy usage

#### Energy pilot plants The concept of the energy pilot plants is

to make a step change reduction in energy costs by using energy more efficiently and effectively. Four pilot sites were active for three years in phase 1 and five phase 2 sites were launched in FY15. Further pilot site launches are planned in Japan, Vietnam and Brazil this year. New and existing pilot sites cover 63 percent of the NSG Group's energy spend.

Cross-functional pilot site teams are led locally by the plant manager, with proactive support from other Group functions, and extensive use is made of third party suppliers. Over 100 projects are under evaluation or being implemented.

### Operational energy-efficiency projects

The Operational Cost Saving program aims to reduce all operational costs in the area of prime and overhead costs. One of the largest prime costs for the Group is energy. To support the cost saving activities across sites, a deep analysis of all of the energy projects within the OCS database has been completed. Multiple projects were identified for rapid dissemination in FY15 to deliver energy and cost savings. Each manufacturing site within the Group had at least one active OCS energy project in FY15.

Led by Manufacturing Excellence and assisted by other Group functions, NSG sites identified 68 zero-investment energy-optimization opportunities, resulting in annual CO<sub>2</sub> savings of 21kt.

Major projects include furnace fuel combustion optimization, reducing electrical requirements of motors and reducing the number of dryers needed for compressed air. Savings for each site have been monitored and resulted in total savings of 9GWh electricity and 57GWh fossil fuel in 12 months.

2kt CO<sub>2</sub> /year have been saved due to the installation of electricity sub-metering equipment and energy-efficient lighting at multiple sites in 2014.

We continue to benefit from reduced consumption of electricity and natural gas and save 4kt CO<sub>2</sub> /year due to the installation of waste heat recovery processes.

#### Management systems

Investment in energy management systems includes the achievement of ISO 50001 certification across all operations in Germany, Italy and recently Finland, with installation of sub-metering hardware and software. A high level of transparency in energy consumption enables a sophisticated energy-planning process with improvement activities, target setting and frequent reviews.

#### **Energy Committee**

All initiatives are monitored by the Heads of SBUs and Group functions at six monthly Energy Committee meetings, chaired by the Chief Operating Officer.

### Employee energy efficiency awareness

We have continued our efforts with an ongoing program of work across all sites to increase energy awareness. This program involves a number of teams within the manufacturing organization with the objective of delivering significant improvements in the energy efficiency of our operations and includes a Group-wide database of energy-saving projects.

### Renewable on-site energy generation and alternative fuels

The use of a waste-derived biofuel oil instead of heavy fuel oil in a glass-melting furnace has cut  $CO_2$  emissions by 8kt per year.

Our Rossford technical center in North America produces about 7 percent of its own electricity with on-site photovoltaic generation. We have installed photovoltaic panels on the roof of our German Weiherhammer plant.

#### Partnership with suppliers

We continue to partner with key suppliers to develop projects to reduce energy consumption in our manufacturing sites. Close collaboration with leaders in specific technologies is enabling us to implement optimum solutions to specific energy management challenges. Collaborative projects have also been implemented to address compressor inefficiency, to make better use of waste heat generated in our glass-making processes and to reduce peaks in electricity demand.

#### Innovation in cullet recycling

Our Watson Street plant continues to invest in plastic boxes to travel on floatliners with customer glass deliveries. The collected downstream processed cullet is diverted from landfill and, when re-melted, reduces energy consumption and raw material decomposition, saving 3,000 tonnes CO<sub>2</sub> emissions per year.



Recently installed factory lighting is on PIRs which dim automatically when the natural lighting reaches an acceptable level



A large-scale project to shift the Maizuru float line MSF from heavy fuel oil to liquid natural gas stored in two large tanks reduced overall fuel costs and provided a significant reduction in  $CO_2$  emissions. The reduced sulfur content also allowed simplification of the flue-gas desulfurization equipment.

## MINIMIZING ENVIRONMENTAL IMPACT

Glass manufacture is an energy-intensive process, involving the melting of raw materials at high temperatures. Principal process emissions are to air due to the combustion of fuel and decomposition of carbonate raw materials.

#### **Emissions to air**

Glass-melting furnaces produce various pollutants. The most significant of these are: sulfur oxides from refining agents and oil fuel contaminants; nitrogen oxides formed from the combustion air in the hot combustion process; particulate matter derived from the melting process; and carbon dioxide from both the raw material decomposition and the combusted fuels. We are tackling these emissions with a range of primary and secondary control techniques. Primary methods are designed to reduce pollutant formation at source and include techniques such as avoiding certain raw materials and heavy fuel oil types that contribute to emissions. Other primary techniques include using special burners and operating the furnace in an energy-efficient manner. There is special focus in this latter area as it will also reduce production costs. Secondary control involves employing abatement equipment to remove the emissions from the furnace waste gases before they are emitted through the chimney. Techniques such as acid scrubbers, electrostatic precipitators and selective catalytic reduction units are now widespread and are being installed at more sites around the world.



A new pollution control plant has just been installed at the NSG furnace at Maizuru, Japan. The electrostatic precipitator for dust control is in the centre, with the acid gas scrubber to the left and the chimney base to the right. At the same time, the furnace has been converted from oil to gas fuel, which will greatly reduce CO<sub>2</sub> emissions as well.



#### Monitoring and reducing carbon emissions

In 2014, the NSG Group was responsible for the direct and indirect emission of 4.2 million tonnes of  $CO_2$ . Our direct emissions were 3.1 million tonnes. Direct emissions occur from our furnaces and from fuel used in bending and toughening furnaces in Automotive and Architectural Glass. In the operation of our float plants, heavy oil to natural gas conversion has helped to reduce carbon emissions by around 50 percent over the past 40 years and a combination of design and operational innovations has made further progress.



#### NSG Group glass-melting carbon emissions

#### Recycled glass to improve efficiency and reduce emissions

Glass for recycling is a valuable resource. Wherever quality allows, we recycle any glass off-cuts or cullet within our own glass-melting lines. Glass from our downstream operations and from our customers represents a potentially useful resource to us. We gain a double benefit from the use of such cullet: its use to make glass reduces the requirement for raw materials and avoids disposing of what would otherwise be a waste material and closes the recycling loop. Ten percent cullet use saves three percent furnace energy and leads to reductions in CO<sub>2</sub> emissions. One of our sites has recently manufactured glass using 100 percent cullet. Cullet return projects are ongoing to try to minimize the need for virgin raw materials.

Landfill is the least favored disposal option. If glass is produced that cannot be remelted on-site, it is sent, where practicable, for external recycling.

# MINIMIZING ENVIRONMENTAL IMPACT



Grinding mud collection and segregation equipment

#### NSG Group waste



#### Recycling and waste composition

The glass manufacturing process itself produces very little waste material. All trimmed glass from the manufacturing processes is recycled back into the melting process. PVB is used to manufacture laminated glass. PVB trims from the edges of the laminated glass are returned to PVB suppliers to be recycled in their manufacturing processes. In 2014, around 2,000 tonnes of PVB trim was returned to our suppliers or other recyclers to be reused. Our remaining waste to landfill consists mainly of waste glass, reject batch, general waste and glass-grinding sludge. The NSG Group succeeded in reducing the waste sent to landfill by 50 percent since 2007 and set a new Sustainability target to reduce this environmental impact again by 20 percent on 2013 by the end of FY18 (see page 5).



#### Grinding sludge

This waste stream cannot be prevented but we have been actively seeking recycling partners to divert the waste from landfill and provide a raw material for concrete products and other aggregate manufacturers.

#### Float rejected raw material

In 2015, we sought additional reduction and/or recycling opportunities for glass dust and rejected batch – occasional off-specification raw material that often cannot be blended and dust collected by the pollution abatement equipment. Automated process monitoring and control systems are being implemented to proactively reduce the number of reject batches at our Rossford plant and our plant in Ottawa is constructing a new batch plant to reduce batch spillage.



Our Sandomierz, Chmielow, Collingwood and San Salvo sites have redirected grinding muds to recycling and incorporation into concrete products.

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#### Waste glass

The sites producing the highest volumes of waste glass reviewed their cullet segregation and recycling practices to find ways to increase the amount of cullet sent for recycling in float plants and to improve recycling. The Sungai Buloh plant in Malaysia implemented recycling of all printed cullet and found a recycling partner for laminated waste glass. All sites are reviewing recycling opportunities for contaminated cullet and glass dust.

#### General waste

Focus and support has been applied to the highest volume producers to further improve general waste segregation and procurement have been actively involved in finding local recycling partners.

#### Automotive glazing ingredients

In Automotive, all supplied glazing parts and their materials are registered in the global IMDS (International Material Data System) to ensure we have complete visibility of ingredients, confirm material compliance and to identify opportunities for recycling. This data is shared with our Automotive customers, to support their own material compliance and recycling efforts.

PVB is used to manufacture laminated glass. PVB trims from the edges of the laminated glass are returned to PVB suppliers to be recycled in their manufacturing processes. In 2015, around 2,000 tonnes of PVB trim was returned to our suppliers or other recyclers to be reused.

#### Water management

In glass-making, water is used for cooling, and most of our plants operate with closed-loop systems and so only require top up. Water is also used for washing glass in plants but there the need is for very high purity, so water is treated and then reused. We seek to minimize our water consumption by working with suppliers to recycle water and to install advanced water treatment facilities. This not only reduces the consumption of water itself but also the chemicals used in the treatment of the water.

Across the Group water consumption can vary considerably according to process and product demands as well as water quality. Approximately 2 m<sup>3</sup> are required to manufacture one tonne of float glass and approximately 90 liters are required to process each square meter of automotive product. We used a total of 18.8 million cubic meters of water in 2015.

#### Timber

In Europe, much of our glass is transported on steel stillages without packaging, utilizing specialist 'Floatliner' vehicles. We use a significant quantity of wooden packaging in our operations and work with our suppliers to design reusable wooden packaging. Much of the timber we use comes from sustainable forestry.



Waste segregation at Cacapava, Brazil

#### NSG Group water use

Total water use Mm<sup>3</sup>



#### NSG Group timber use

Timber km³



## **EMPLOYEES**



Our Code of Ethics



OUR MANAGEMENT PHILOSOPHY VALUES PEOPLE AS 'THE MOST IMPORTANT ASSET OF OUR COMPANY'. SAFETY AND ETHICAL BEHAVIOR UNDERPIN EVERYTHING WE DO, WITH THE PRINCIPLE OF OPEN COMMUNICATION AND TRANSPARENCY BEING CENTRAL TO OUR EMPLOYMENT POLICIES.

#### **NSG Code of Ethics**

Our Code of Ethics reflects our values and principles and defines for all employees what is expected of them. It emphasizes three action points that the Company expects everyone to take: responsibility for our own ethical behavior, openness and transparency with colleagues, customers and suppliers, and the understanding that unethical behavior in one part of the world can have negative consequences in another part of the Group.

The Code acknowledges internationally proclaimed human rights and these are also reflected in our overall employment policies and standards, providing our employees with reassurance on how they will be treated. Our Equal Opportunity and Diversity Policy aims to prohibit discrimination based on race, color, creed, nationality, age, marital/partnership status, pregnancy and maternity, gender, gender reassignment, sexual orientation, religion or other beliefs, or any other status protected by law. This policy operates in all employment related decisions. The most senior executive with responsibility for human rights aspects is the Chief Human Resources Officer.

#### Employee engagement

We operate comprehensive communication and briefing systems within all our businesses to provide effective mechanisms for two-way communication. Every employee receives monthly updates on Group and local business objectives, targets, results and best practice at Group and business-unit level, including monthly briefings from the regional SBU heads. The Group's employee magazine MADO is produced three times a year and is available to employees in their native language. In addition to the international edition of MADO, the countries with major operations also receive a regional MADO three times a year. We operate formal mechanisms to brief and consult unions and employee representatives on the Group's operations and future plans, as appropriate to local circumstances and requirements.

#### **Employee Survey Results**

The NSG Group's 2014 Employee Survey was held in September 2014 and provided a real opportunity for employees to voice their concerns and influence NSG Group policies and the way we do things. There was an exceptional 90 percent response rate – a rise of three percent on the last poll held in 2011.

Clearly people wanted to make their voices heard and we now have much material on which to build. But, crucially for us as a business, there were satisfyingly high scores for employee motivation and how the NSG Group's Medium-term-Plan (MTP) has been communicated.

Market conditions over the last three years have meant a Group rethink of its business model and the introduction of the MTP, which is heavily dependent on employee commitment and focus.

With motivation up two percent on 2011 and almost three-quarters of NSG Group staff saying they understand the MTP and how to deliver it, we feel communications in these areas are succeeding – even at the early stages of the plan

There was also positive feedback on the Group's reputation and relationships with immediate line managers, and overall satisfaction with place of work and health and safety.

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The results painted a clear picture of how employees believe the Company is doing in a range of areas and also uncovered areas of opportunity to improve engagement. Naturally, there are areas that did not come out so highly and because NSG has operations across four regions it is really important to have country- and site-specific action plans to ensure the most relevant issues are addressed for employees. 152 plans are currently being implemented locally with regular reviews of progress planned throughout the year, with an expected completion date by the end of December 2015.

### Personal development and growth

A key focus for us was the results to the question: 'I believe I have the opportunity for personal development and growth in the NSG Group', as analysis showed that improvements in this area would have the highest impact on improving engagement right across the Group.

In response to this, NSG has focused on helping managers improve discussions on personal development and growth at the annual appraisal.

This focus is reflected in the Group learning and development objectives for FY16, with a target for 30 percent of employees to have an individual development plan and 30 percent of employees not on ETWeb to feature on a collective development plan.

#### Supporting UN Women HeForShe campaign

HeForShe is a solidarity movement for gender equality developed by UN Women to engage men and boys as advocates and agents of change for the achievement of gender equality and women's rights. The campaign encourages them to speak out and take action against inequalities faced by women and girls. The overall goal of the campaign is to spread awareness and spark action on the responsibility that men and boys have in eliminating all forms of discrimination and violence against women and girls.

Employees in NSG sites across Brazil have recently been involved in a number of activities to support this campaign.

The Company used marketing emails and notice boards to post reflective messages on the theme using images of workers from a number of different sectors, religions and cultures to expand employees' visions about the gender equality theme.

Our Brazilian and Chilean sites have used the HeForShe initiative to encourage more females to consider manufacturing as a career – this initiative is specifically aimed at female engineers.

#### NSG Group female employee distribution

(as at 31 March 2015)

Asia Europe North America	Managers 3.9% 20.4% 21.7%
South America NSG Group	7% 13.3%
Asia Europe North America South America NSG Group	Employees 18.8% 15.1% 18.5% 6.5% 15.9%



Employees in Brazil supportUN HeForShe gender equality campaign



## HEALTH AND SAFETY

#### Significant Injury Rate (SIR)



#### Type of significant injury



Our safety programs emphasize the importance of individuals taking personal responsibility for appropriate safe behavior, with managers taking the lead through their commitment to key safety leadership behaviors.

#### Safety organization and strategy

The NSG Group Sustainability Director reports to the Chief Operating Officer. Monthly safety updates are provided to the COO while more in-depth management reviews are completed every six months with the senior operations team comprising the heads of the four SBUs and the heads of the Group functions. These reviews were held in the UK in February 2015 and Brazil in September 2015. All injuries at work are regarded as avoidable. We require full reporting of all incidents, no matter how minor, and appropriate investigation to ensure we learn from all such events. The Group has a focus site approach which provides additional support and more regular reviews for sites that have more than a defined number of significant injuries.

#### Safety performance

Safety improvement begins with a focused approach to the prevention of conditions and behaviors which lead to injuries. NSG drives proactive safety by Measuring Safety 4 Ways, which includes:

- Safety Improvement Plans (SIP) reducing hazards and risks through planned improvements of conditions and behaviors that lead to incidents.
- Incidents of High Potential Severity (IHPS) reviewing all incidents with a critical eye, asking what could have happened and could the incident have led to a serious injury or fatality; then taking preventative actions.
- Key Safety Behaviors (KSB) focus on how our employees complete tasks, working to reduce at-risk behaviors through frequent feedback.
- Significant Incident Rate (SIR) The Significant Injury Rate (SIR) is our primary reactive indicator. The SIR records injuries requiring medical treatment or the reallocation of duties to allow an individual to continue working, expressed as a rate per 200,000 hours worked.

The Significant Injury Rate for the year to 31 March 2015 of 0.35 represents a 10 percent improvement in safety performance compared to FY2014 on a like-for-like basis. This is in line with the Group's Medium-term-Plan, focusing on a year on year improvement.

Despite our continued focus on high-risk activities, regrettably the NSG Group has experienced its first fatal injury in three years. An employee suffered a head injury as a result of a fall from a flatbed trailer whilst preparing a load for shipment.

We must acknowledge and learn from this event. We owe it to this employee and his family, along with all of our colleagues and their families, to ensure that the identified actions are communicated and that these are completed globally across all of our operations. We are committed to our high-risk reduction program and the safety tools we have in place.

Following the initial communication of the event, all SBUs have implemented improvement plans which include assessing where employees work where there is a risk of falling; identifying areas where the tasks can be eliminated; and completing actions where working at height is required to prevent employees from falling. Finally, we have improved the type of PPE employees wear in particular the requirement to wear helmets with a four-point harness.



#### **High-risk activities**

We continue to focus on the following high-risk activities, tracking projects related to:

- Vehicle and pedestrian safety
- Machinery safety: guarding, frequent access and isolation
- Contractor control, including permits
- Materials handling: moving glass, load security, grabs, trolleys and pallets
- Driving

#### Moving safety to the next level

The safety strategy remains the same, with a focus on improving the effectiveness of our safety tools and programs. We believe that our employees and supervisors will make the difference in moving safety to the next level through the following initiatives:

- Independent audits of our safety tools to drive a more consistent approach, develop our safety skills and improve our shared learning. These audits were cross regions and cross sites within a region for maximum impact.
- Further improve our level of proactive employee involvement as a means of continuing to change our safety culture.
- Further develop our first-line supervisors to improve our overall level of safety leadership.

#### **NSG Safety Day**

The NSG Safety Day took place on 15 October 2015 and continued to be a successful global event. All sites organized health-related activities and employees were given the opportunity to improve their first aid, firefighting and emergency response skills. Senior managers attended sites to demonstrate their personal commitment and the opportunity was taken to celebrate safety success.



Machinery safety is still a key focus area, including complete isolation.



Safety Day poster



In Mexico, Safety Day activities allowed pedestrians to sit on forklift trucks to appreciate the driver's blind spots and recognize the need to signal for recognition.

## **CUSTOMERS**



Blindex<sup>®</sup> Safety Glass

#### Safety quality and service standards are key features in building relationships with our industry customers and end consumers.

#### **Customer First**

Understanding our customers' position and proposing solutions that work for them is critical for a VA Glass Company. The NSG Group operates a leadership program for Sales and Commercial management teams with the objective to equip our managers with the tools and skills to enable them to respond to changing market demands.

The North American Architectural team are progressing their 'Customer First' approach which goes beyond simply improving the quality of our products and services. The objective is complete customer satisfaction that will only be achieved by defining what excellence means for each customer. Everyone across the organization has become a part of the solution to provide our customers with consistently positive customer experiences before, during and after their purchases across every point of contact in the NSG Group.

#### Product responsibility

We are committed to the safe use of our products, ensuring they can be effectively handled, fitted and used by our customers. We aim to provide customers with products and services that offer social, environmental and safety benefits. Our training and support helps our customers to identify and mitigate risks or to raise awareness of sustainability issues. We are committed to the safety of our products and to ensuring they can be effectively handled, fitted and used by our customers. This includes the safe handling of sheet glass or the correct fitment of windshields in vehicles to maintain their quality and strength.

In order to improve its product safety performance, Blindex® offers an exclusive shower safety glazing. A survey conducted by Blindex® showed that most accidents with injury risks occur as a result of shower door breakages. From this data, it was decided that safety films must be applied to the doors to offer more security to consumers. The safety film is applied to the surface of the glass on the production line for the film to become a part of the glass. Blindex® in Brazil were responsible for equipping all its franchisees with the necessary manufacturing equipment.

Before the product launch there were reports in the media of shower doors breaking and the impact on people's lives. For the product launch, a national campaign was run to raise awareness of the safety issues with shower doors and the available solution to eliminate these injuries.

#### **Highest quality**

Quality is a key feature in building successful relationships with our industry customers and end customers. It is also a key factor in sustainability, because high quality can reduce waste throughout the supply chain, while improving production efficiencies. Quality encompasses design, development, manufacture, delivery, assembly and price of glass, as well as customer support. In the NSG Group, the achievement of high quality is supported by the use of rigorous quality management systems and standards. In the Architectural Glass business, the Group has ISO 9000:2000 quality management certification in Europe, Japan, North America and South America. Our European Architectural Glass business has been a leading player in the development of new glass product standards for the European building industry. These standards have provided a route for glass manufacturers to meet the European Construction Products Directive and apply to virtually all NSG Group products used in buildings.



#### **Product innovation**

The NSG Group is a global leader in manufacturing excellence and innovation, notably in the areas of glass melting, glass forming by the float process, online coating and complex shaping technology, especially for automotive windshields and backlights. The Group invested ¥8,212 million in R&D in FY2015.

The Group owns or controls approximately 4,000 patents and patent applications, predominantly in the fields of float glass production and processing, automotive glazing and also in the information technology field. It also has access under license to patents held by third parties.

The Group is active in selective licensing of its patents and technology, in the areas of online coating, encapsulation (of automotive glazing) and rain sensors for automotive glazing.



In the Cosmetics sector, innovation is vital to developing business opportunities. It is not sufficient to simply meet the current customer specification, the NSG Group must work closely with its customers to anticipate future trends. The recently launched range of vivid Metashine® grades for cosmetics applications extend the range of bright, vivid colours for our customers so they can develop desirable cosmetics that provide a feeling of well-being for their consumers.

#### Vacuum double glazing

NSG's Spacia technology is the world's first commercially available 'vacuum glazing' that provides a similar level of energy efficiency as modern double glazing but with the thickness and weight of a single sheet of glass. Spacia 21<sup>®</sup> extends this concept into a double glazed unit to offer high thermal transmittance of 0.7 W/ m<sup>2</sup>K, which is equivalent to 50mm of glass wool and is approximately 2.3 times better than low-e IGU of equal thickness. With Solar control coatings it can also reduce solar heat gain through the window by 54 percent.

Spacia 21<sup>®</sup> was certified 'L2-Tech 2015 Summer' by the Ministry of Environment in Japan as a measure against global warming, the highest standard for leading technologies that reduce energy consumption and carbon dioxide emissions.



Architectural Spacia 21 Certification

## **SUPPLIERS**

### Achievement against target by end of 2015



By the end of 2015 we have completed an evaluation on over 280 companies of which over half are fully compliant and a further third meet our minimum criteria. The remainder have been prioritized for further development. We purchase materials, goods and services from over 20,000 suppliers worldwide. Our Supplier Code of Conduct and related evaluations help ensure that our suppliers understand and comply with our standards.

#### Our Supplier Code of Conduct

As part of our Sustainable Procurement Program, we operate a Supplier Code of Conduct. It outlines behaviors, processes and procedures – in short, the standards we expect from our suppliers. Engagement with suppliers may be via appropriate category account managers and the Procurement function has the responsibility to ensure that suitable engagement arrangements are in place and communicated.

Our manufacturing processes use materials, products and services procured from a wide range of regional and global suppliers. Our suppliers are therefore crucial to the achievement of our sustainability objectives. To manufacture and supply superior quality glass products to our customers, we aim to build strong relationships with suppliers that are based on a framework of trust, co-operation and sustainability.

The wide range of issues addressed in the Code reflect the many and diverse activities in which our suppliers are involved. Wherever possible, the Code defines a fair and commonsense approach to doing business, while incorporating all relevant legal requirements. The content of the Code also takes into account our values and principles, particularly the emphasis on safety, taking personal ownership for our actions and communicating with openness and involvement. It is the responsibility of all of our suppliers to follow the principles of this Code to ensure compliance with our requirements.

Insisting that our suppliers agree to adhere to our Code has influenced who we develop longer-term relationships with as part of our category strategies and who we do not. It has also prioritized which suppliers we need to develop and improve further to ensure full compliance.

#### Supplier sustainability evaluation

Between 2011 and December 2015 we aimed to evaluate *circa* 300 suppliers against our Supplier Code of Conduct. In order to meet this challenge and to carry out additional due diligence on our suppliers of high environmental impact, NSG has engaged in the services of an external service provider.

#### Process and methodology

The methodology applied is at the core of the CSR analysis system; covering 21 criteria across four themes i.e. Environment, Fair Labor Practices, Ethics/ Fair Business Practices and Supply Chain.

The methodology is built on international CSR standards including the Global Reporting Initiative, the United Nations Global Compact, and the ISO 26000, covering 150 spend categories and 140 countries.



### Ranking supplier risk on the environment

In recent years we have implemented a program of identifying suppliers that have a potentially high impact on the environment (categorized as HEI). Our aim is to ensure that our suppliers minimize their potentially negative impacts and work positively on environmental initiatives. The scope covers 13 of our material categories which we now categorize as being of 'High Environmental Impact', including wooden packaging, batch materials, wastemanagement contractors and chemicals. We expect that all suppliers in these categories have a recognized environmental certification such as ISO 14001 or equivalent. In the case of wooden packaging, paper and cardboard, we look for a recognized chain of custody (e.g. FSC or PEFC) in regard to the raw material supply.

We continue to make progress on compliance levels and currently an average >70 percent in these categories fully meet our requirements. Those who do not will undergo further evaluation and development. Any suppliers unwilling to accept this may be phased out.

#### **Conflict minerals**

The NSG Group supports the goals and objectives of the Dodd-Frank Wall Street Reform and Consumer Protection Act's Section 1502, which aims to prevent the use of conflict minerals that directly or indirectly finance or benefit armed groups in The Democratic Republic of the Congo (DRC) or an adjoining country as defined in the Act.

Identifying suppliers who provide materials that could potentially include these minerals is now a very important part of our procedures and due diligence continues to be completed via an online questionnaire.

### Anti Bribery Anti Corruption (ABAC)

By tracking to identify unethical owners and directors of companies, we have identified a number of Procurement Material Categories which may pose a higher bribery or corruption risk due to the nature of supply within them. We monitor these suppliers through a third-party due diligence platform and will investigate any indication of unethical behavior by any supplier or associated directors. In addition to this, our supplier implementation process now contains risk indicators; these are designed to highlight any potential suppliers that are at heightened bribery or corruption risk, regardless of Material Category, allowing us to assess their ethical integrity through the due diligence platform.

### Working with suppliers to save energy

Our procurement activities and projects demonstrate our commitment to sustainability. Good practice is shared through Global Procurement Category teams and spread throughout the Group. We leverage our Global Procurement function to achieve this spread of good practice effectively and efficiently. We continue to work with key suppliers to develop projects to reduce energy and water consumption in our manufacturing sites, utilizing their expertise in various technologies to develop solutions to specific energy management challenges. For example, in one of our major plants in Italy, both the consumption of incoming fresh water and the discharge of waste water have been reduced significantly through application of additional sophisticated water treatment processes.

In Japan, one of our furnaces has been able to switch to a more environmentally friendly fuel as a result of extensive collaboration between technical experts from NSG and the fuel supplier.

In one of our plants in Poland, more advanced refrigeration control systems have enabled greater cooling capability whilst reducing electricity consumption.

### Communication and co-operation

In line with our Sustainability Policy, we communicate with and work constructively with our suppliers and governments, regulatory agencies, the scientific community and other relevant stakeholders to develop and encourage business and community practices that make progress towards the common aim of sustainable development.

#### High Environmental Impact Compliance Progress 2012-2015



## COMMUNITIES



Bristol employees' design a safet poster campaign



ian Salvo employees train employees' hildren in the basics of fire prevention and firefighting as part of a Safety Day amily activity.

The local communities throughout the world in which the NSG Group operates are the foundation of our business and the lives of employees. Without a relationship of mutual benefit with these communities, the Group as a whole could not sustain its operation.

We have around 27,000 permanent employees, with principal operations in 28 countries throughout Europe, Japan, North and South America, China and South and South East Asia. We do this in over 500 separate facilities worldwide – some large and some small. Each has an impact on the community in which it is based, by providing employment, investment and other benefits, but also having an impact on the environment.

The effects of necessary investments on our communities are generally beneficial, bringing additional employment and economic benefits. For every investment we make, an impact assessment is conducted to ensure we understand and manage the likely effects on the community, the environment and the local economy.

As a responsible and often prominent member of the communities in which we operate, we believe it is important to be involved actively by leveraging our core business and management resources to help to address local issues.

#### Aims and objectives

We want our operations to function in healthy, thriving communities and to be seen as a good neighbor to those communities.

We know that if we want to operate effectively and to be able to expand or change when the time is right, we need the goodwill that comes from being an active supporter of the community.

In addition to our business investments helping to sustain local operations, we also invest in the communities in which we operate. We aim to help – through direct cash donations to charities and other projects or through in-kind resources – to improve the health of the community or tackle specific social issues. We operate programs that assess and manage the impacts of our operations on communities, including entering, operating and exiting.

We also involve our staff in providing a lead in developing our relationships with the communities in which we operate. This can take the form of matching contributions raised by staff or allowing staff time to make personal contributions of time and effort in local projects.

In FY2015, we made contributions worth around ¥70 million to our local communities. Our grants helped the arts, medicine, welfare, job creation and urban renewal.



Local community action initiatives



NSG sites across Brazil have recently been disseminating the reflection on gender equality in communities where the Company nas manufacturing plants, using its employees as propagation agents.

The Company used marketing email messages and notice boards to disseminate reflective messages on the theme. It also offered two lectures about the theme delivered by the Company's president and directors, with employees' participation.



VASA´s employees, retired employees and their families worked together to build doors and windows for emergency houses. This project was completed with an organization called "TECHO" who identify communities that need help and organize social projects: houses, food and education etc.



NSG sponsored the Sustainable School Award at the St Helens Reporter Education Awards 2014. This category recognizes schools that have developed environmental awareness and sustainable development education across all the curriculum areas and the life of the school.

## SHAREHOLDERS

We aim to keep our shareholders informed through a focused international investor relations program. This encompasses regular communications throughout the financial year, through meetings, publications, plant visits and our websites.

In communicating with our shareholders, investors, the financial community regulatory authorities and the media, our aim is to report in a transparent, timely and accurate manner.

Our overriding objective is to provide as much information as possible to help our shareholders and potential shareholders understand our strategy and performance, to enable them to take investment decisions.

Annual and interim reports are produced in both Japanese and English and widely distributed to stakeholders who may have an interest in our performance. These documents are also made available on our websites.

The CEO makes regular reports to the Board on investor relations and on specific discussions with major shareholders. The Board receives copies of all research published on the Group. Shareholders have an opportunity at the General Meeting of Shareholders to ask questions of the Chairman and other members of the Board.

Our Investor Relations (IR) Policy reflects our aims to be open and fair and to comply with corporate ethics. The NSG Group is listed on the Tokyo Stock Exchange (TSE) and we disclose information in line with the TSE 'Rules on Timely Disclosure of Corporate Information by Issuers of Listed Securities'. Where information does not fall under the category of timely disclosure rules, our policy is to communicate it swiftly and fairly, once it has been determined that the disclosure of such information is beneficial to investors.

#### Communicating our strategy

In May 2014, we announced the Group's Long-term Strategic Vision and Mediumterm-Plan (MTP). The information is available in both English and Japanese on our website.

#### Long-term Strategic Vision

We announced that our new Strategic Vision is to transform the Group into a 'VA Glass Company'. 'VA' comes from 'valueadded' and our aim is to:

- consolidate our trusted reputation as a glass specialist;
- work closely with our customers in a range of global industries to deliver unique value through our products and services; and
- transform our float glass business, moving from a traditional business model towards one increasingly focused on VA.

Through this shift in focus, to become more of a 'VA Glass Company' the Group aims to become a more profitable and financially stronger business, with a lighter asset base, while reducing the cyclical nature of the business at the same time.

#### Medium-term-Plan

The period through to FY2018 is critical to the establishment of the Group as a **'VA Glass Company**', the priority being to enhance our financial and operational performance while we shift to selling more value-added products as described in our Long-term Vision. Operational performance will focus on our shift to selling a greater proportion of value-added products, fully utilizing our existing capacity and consolidating our reputation for manufacturing excellence.

We are executing our strategy through a market-facing regionally organized business, based on three business areas: Architectural, Automotive and Technical Glass. A good balance between regional and global organizational structures will drive efficiency and allow us to react quickly to market developments. In parallel, we are strengthening our market-driven culture, creating a passion for revenue growth, to fully utilize our assets.

We are aiming to lower the break-even point of our business by reducing overheads, improving manufacturing efficiency and controlling our input cost through best-in-class procurement and shared services. We aim to ensure that we spend our limited resources wisely and generate capacity at much lower capital costs.



We believe that 'people are our most important asset' and that effective use of our people is the main driver to surmount the current challenges we face. We are determined that we will not lose sight of our core values and principles, with safety and quality remaining top priorities. We aim to be a sustainable company, believing that good management of our people, our resources, our communities and our environment also makes good business sense.

### Communicating our performance

We report our results on a quarterly basis. We hold half-year and year-end financial results briefings for securities analysts and investors in Japan, with further communications in the intervening guarters. The CEO, COO and CFO personally present and discuss financial results, charting our progress against our strategy and the future outlook for the Group. Supplementing this, the top management and IR team give background briefings to analysts and investors following the release of financial results. From time to time we arrange plant visits to enable analysts to see our operations at first hand. Over the past years, we have increased our focus on non-financial aspects of our performance relating to sustainability. This Sustainability Report is an important channel for communicating our progress. It is made available to shareholders in both English and Japanese versions, with additional data available on our website.

#### Shareholder composition

The acquisition of Pilkington plc in 2006 transformed NSG from a regional Japanese glass company to an international group headquartered in Tokyo. Following the acquisition, the proportion of nonresident foreign corporations and foreign individuals owning NSG Group shares rose, but has since dropped back, with a higher proportion of individual shareholders now based in Japan. Nevertheless, as an international group based in Japan, we have expanded our global IR effort to meet the requirements of shareholders and potential investors around the world. Most of our publications are produced in both Japanese and English. Details can be found on page 40 of this Report and on our website. We organize 'road shows' for analysts, investors and potential investors outside Japan, when appropriate.

#### Distribution of NSG Group shareholders (as at 30 September 2015)

Financial institutions
Financial institutions
Securities companies
Sr%
Other corporate entities
Foreign companies/individuals
Trasury stock
Ot%



Shigeki Mori at a press conference



NSG Group executive officers present at an analysts meeting

## FURTHER INFORMATION

We produce a regular flow of publications intended to provide current and potential investors with as much information as possible about the group, the industries in which we operate and the organization, strategy, targets and progress of the group.

#### **Publications**

The range of these publications is shown below.

Annual Report In order to obtain a full understanding of the performance of the Group, this document should be consulted.

To Our Shareholders Published twice a year, in June and December, designed to keep shareholders informed of progress against our strategy. Editions in both English and Japanese.

NSG Code of Ethics Produced for Group employees in all of the languages in which the Group operates, summarizing the main points of the Group's Code of Ethics.

#### **Company information**

(as at 31 March 2015)

Company name: Nippon Sheet Glass Co., Ltd.

Unified global brand: NSG Group

Head office: 5-27, Mita 3-Chome, Minato-ku, Tokyo 108-6321 Japan

Established: 22 November 1918

Paid-in capital: ¥116,449 million

Total assets: ¥920,106 million

Net sales: ¥626,713 million (consolidated)

Employees: 27,371

NSG Group companies: 233

Web: www.nsg.com

#### Websites

NSG Group corporate website (English) www.nsg.com

NSG Group corporate website (Japanese) www.nsg.co.jp

Commercial website (Architectural and Automotive) www.pilkington.com

Sustainability contact www.nsg.com/en/contact-us

For information about our GRI index visit http://www.nsg.com/en/sustainability /griindex

## OUR APPROACH TO REPORTING

This Report forms part of our non-financial performance communications and reflects Group, regional and site-level reporting. Unless otherwise stated, the Report covers those businesses over which the NSG Group has management control. Data relating to the environmental performance of Group operations covers 28 float and five rolled-glass sites. Joint venture sites where we do not have operational control are excluded. All Architectural, Automotive and Technical Glass downstream processing are also included in the reporting. Safety statistics shown cover our 'workforce' (employees and permanent contractors).

Our environmental and social performance is of interest to our stakeholders and important to our business success and we have been reporting on these matters since 2002, in successive environmental, social activity or CSR reports. We published our first Sustainability Report in 2009, when we decided to widen our reporting to cover all aspects of sustainability. In June 2009, we published our Group Sustainability Policy, setting our sustainability agenda, and in December 2009 established the Group Sustainability Committee to direct, coordinate and monitor our efforts to improve our approach to sustainability. In 2010, the Board agreed specific sustainability targets for the Group. New targets are shown on page 5 of this Report, along with an account of our progress towards them. In 2012, Shiro Kobayashi was appointed as the Group's Director of Sustainability. Clemens Miller chairs the Sustainability Committee, which is leading our efforts to ensure that the principles of sustainable development are embedded in all of the Group's activities. We will report further on our progress in our 2016 Sustainability Report, which will be published in early 2017.

This Sustainability Report has been prepared using the the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines as a globally recognized framework for reporting on an organization's economic, social and environmental performance and responsiveness.



For detailed GRI and UNGC index, please visit www.nsg.com/ sustainability

